AMENDMENTS TO CLAIMS

Claims 1 – 22 (canceled)

Claim 23 (new): An optical packet switching method for switching inputted optical packets over NW wavelengths, the inputted optical packets comprising optical packets having different attributes of a characteristic based on delay sensitivity, where NW is an integer greater than one, the method comprising:

grouping the NW wavelengths into KG groups of wavelengths according to the different attributes of the characteristic based on delay sensitivity so that each of the KG groups of wavelengths is allocated to optical packets having a common delay sensitivity level which is different from a delay sensitivity level of other optical packets, where KG is an integer greater than one; and

switching each one inputted optical packet over a wavelength having an available transmission resource selected from among wavelengths in one of said KG groups of wavelengths that is matched to the one inputted optical packet by correspondence of a delay sensitivity level.

Claim 24 (new): The method according to claim 23 and wherein said grouping comprises allocating more wavelengths to delay sensitive optical packets than to delay insensitive optical packets.

Claim 25 (new): The method according to claim 23 and wherein the inputted optical packets comprise Internet Protocol (IP) packets.

Claim 26 (new): The method according to claim 25 and wherein the IP packets comprise IP packets that are produced in at least one of the following: an IP-over-WDM network; an Ethernet based network; an IP-over-SDH-over-WDM (IPoSDHoWDM) network; an IP-over-SONET-over-WDM (IPoSONEToWDM) network; and an IP-over-ATM-over-WDM (IPoATMoWDM) network.

Claim 27 (new): The method according to claim 23 and wherein:

the optical packets having different attributes of a characteristic based on delay sensitivity also comprise optical packets having different attributes of a characteristic based on optical packet bit-rate range;

the grouping comprises grouping the NW wavelengths into KG groups of wavelengths both according to the different attributes of the characteristic based on delay sensitivity and according to the different attributes of the characteristic based on optical packet bit-rate range so that each of the KG groups of wavelengths is allocated to optical packets having both a common delay sensitivity level and a common bit-rate range which are different from at least one of the following: a delay sensitivity level of other optical packets; and a bit-rate range of other optical packets; and

the switching comprises switching each one inputted optical packet over a wavelength having an available transmission resource selected from among wavelengths in one of said KG groups of wavelengths that is matched to the one inputted optical packet by correspondence of both a delay sensitivity level and a bit-rate range.

Claim 28 (new): The method according to claim 23 and wherein:

the optical packets having different attributes of a characteristic based on delay sensitivity also comprise optical packets having different attributes of a characteristic based on optical packet service level;

the grouping comprises grouping the NW wavelengths into KG groups of wavelengths both according to the different attributes of the characteristic based on delay sensitivity and according to the different attributes of the characteristic based on optical packet service level so that each of the KG groups of wavelengths is allocated to optical packets having both a common delay sensitivity level and a common service level which are different from at least one of the following: a delay sensitivity level of other optical packets; and a service level of other optical packets; and

the switching comprises switching each one inputted optical packet over a wavelength having an available transmission resource selected from among wavelengths in one of said KG groups of wavelengths that is matched to the one inputted optical packet by correspondence of both a delay sensitivity level and an optical packet service level.

Claim 29 (new): An optical packet switching method for switching inputted optical packets over NW wavelengths, the inputted optical packets comprising optical packets having different attributes of a characteristic based on optical packet carrier wavelength band, where NW is an integer greater than one, the method comprising:

grouping the NW wavelengths into KG groups of wavelengths according to the different attributes of the characteristic based on optical packet carrier wavelength band so that each of the KG groups of wavelengths is allocated to optical packets that are provided at a common wavelength band which is different from a wavelength band of other optical packets, where the common wavelength band comprises a plurality of separate optical channels and KG is an integer greater than one; and

switching each one inputted optical packet over a wavelength having an available transmission resource selected from among wavelengths in one of said KG groups of wavelengths that is matched to the one inputted optical packet by correspondence of a wavelength band.

Claim 30 (new): The method according to claim 29 and wherein the common wavelength band comprises a wavelength band of an order of magnitude of tens nanometers (nm) around one of the following wavelengths: 780nm; 980nm; 1310nm; 1480nm; 1510nm; 1550nm; and 1620nm.

Claim 31 (new): The method according to claim 29 and wherein the common wavelength band comprises one of the following wavelength bands: 1488 - 1518 nm (the S-Band); 1526 - 1563 nm (the C-Band); and 1569 - 1613 nm (the L-Band).

Claim 32 (new): The method according to claim 29 and also comprising directing more of the inputted optical packets to a first wavelength band that experiences a first level of interference than to a second wavelength band that experiences a second level of interference which is higher than the first level of interference.

Claim 33 (new): The method according to claim 29 and wherein the inputted optical packets comprise Internet Protocol (IP) packets.

Claim 34 (new): The method according to claim 33 and wherein the IP packets comprise IP packets that are produced in at least one of the following: an IP-over-WDM network; an Ethernet based network; an IP-over-SDH-over-WDM (IPoSDHoWDM) network; an IP-over-SONET-over-WDM (IPoSONEToWDM) network; and an IP-over-ATM-over-WDM (IPoATMoWDM) network.

Claim 35 (new): An optical packet switching method for switching inputted optical packets over NW wavelengths, the inputted optical packets comprising optical packets having different attributes of a characteristic based on optical packet carrier wavelength priority, where NW is an integer greater than one, the method comprising:

grouping the NW wavelengths into KG groups of wavelengths according to the different attributes of the characteristic based on optical packet carrier wavelength priority so that each of the KG groups of wavelengths comprises wavelengths having a common priority which is different from a priority of wavelengths in other groups, where KG is an integer greater than one and the common priority comprises a priority with respect to at least one of the following: wavelength conversion; susceptibility to interference; and congestion level of carried optical packets; and

switching each one inputted optical packet over a wavelength having an available transmission resource selected from among wavelengths in one of said KG groups of wavelengths that is matched to the one inputted optical packet by

correspondence of an attribute of the characteristic based on optical packet carrier wavelength priority.

Claim 36 (new): The method according to claim 35 and wherein the inputted optical packets comprise Internet Protocol (IP) packets.

Claim 37 (new): The method according to claim 36 and wherein the IP packets comprise IP packets that are produced in at least one of the following: an IP-over-WDM network; an Ethernet based network; an IP-over-SDH-over-WDM (IPoSDHoWDM) network; an IP-over-SONET-over-WDM (IPoSONEToWDM) network; and an IP-over-ATM-over-WDM (IPoATMoWDM) network.

Claim 38 (new): An optical packet switching method for switching inputted optical packets over NW wavelengths, the inputted optical packets comprising optical packets having different attributes of a characteristic based on optical packet service level, where NW is an integer greater than one, the method comprising:

grouping the NW wavelengths into KG groups of wavelengths according to the different attributes of the characteristic based on optical packet service level so that each of the KG groups of wavelengths is allocated to optical packets provided at a common service level which is different from a service level of other optical packets, where KG is an integer greater than one; and

switching each one inputted optical packet over a wavelength having an available transmission resource selected from among wavelengths in one of said KG groups of wavelengths that is matched to the one inputted optical packet by correspondence of an optical packet service level.

Claim 39 (new): The method according to claim 38 and wherein said grouping comprises allocating a different number of wavelengths to inputted optical packets provided at different service levels.

Claim 40 (new): The method according to claim 38 and wherein said grouping comprises allocating wavelengths which provide different transmission conditions to inputted optical packets provided at different service levels.

Claim 41 (new): The method according to claim 38 and wherein the inputted optical packets comprise Internet Protocol (IP) packets.

Claim 42 (new): The method according to claim 41 and wherein the IP packets comprise IP packets that are produced in at least one of the following: an IP-over-WDM network; an Ethernet based network; an IP-over-SDH-over-WDM (IPoSDHoWDM) network; an IP-over-SONET-over-WDM (IPoSONEToWDM) network; and an IP-over-ATM-over-WDM (IPoATMoWDM) network.

Claim 43 (new): An optical packet switch for switching inputted optical packets over NW wavelengths, the inputted optical packets comprising optical packets having different attributes of a characteristic based on delay sensitivity, where NW is an integer greater than one, the optical packet switch comprising:

a switching fabric; and

a switching/routing control unit operatively associated with the switching fabric and operative to control the switching fabric for switching each one inputted optical packet over a wavelength having an available transmission resource selected from among wavelengths in one of KG groups of wavelengths, where KG is an integer greater than one, the KG groups of wavelengths are formed by grouping the NW wavelengths according to the different attributes of the characteristic based on delay sensitivity so that each of the KG groups of wavelengths is allocated to optical packets having a common delay sensitivity level which is different from a delay sensitivity level of other optical packets, and said one of KG groups of wavelengths is matched to the one inputted optical packet by correspondence of a delay sensitivity level.

Claim 44 (new): An optical packet switch for switching inputted optical packets over NW wavelengths, the inputted optical packets comprising optical packets having different attributes of a characteristic based on optical packet carrier wavelength band, where NW is an integer greater than one, the optical packet switch comprising:

a switching fabric; and

a switching/routing control unit operatively associated with the switching fabric and operative to control the switching fabric for switching each one inputted optical packet over a wavelength having an available transmission resource selected from among wavelengths in one of KG groups of wavelengths, where KG is an integer greater than one, the KG groups of wavelengths are formed by grouping the NW wavelengths according to the different attributes of the characteristic based on optical packet carrier wavelength band so that each of the KG groups of wavelengths is allocated to optical packets that are provided at a common wavelength band which is different from a wavelength band of other optical packets, the common wavelength band comprising a plurality of separate optical channels, and said one of KG groups of wavelengths is matched to the one inputted optical packet by correspondence of a wavelength band.

Claim 45 (new): An optical packet switch for switching inputted optical packets over NW wavelengths, the inputted optical packets comprising optical packets having different attributes of a characteristic based on optical packet carrier wavelength priority, where NW is an integer greater than one, the optical packet switch comprising:

a switching fabric; and

a switching/routing control unit operatively associated with the switching fabric and operative to control the switching fabric for switching each one inputted optical packet over a wavelength having an available transmission resource selected from among wavelengths in one of KG groups of wavelengths, where KG is an integer greater than one, the KG groups of wavelengths are formed by grouping the NW wavelengths according to the different attributes of the characteristic based

on optical packet carrier wavelength priority so that each of the KG groups of wavelengths comprises wavelengths having a common priority which is different from a priority of wavelengths in other groups, said common priority comprising a priority with respect to at least one of the following: wavelength conversion; susceptibility to interference; and congestion level of carried optical packets, and said one of KG groups of wavelengths is matched to the one inputted optical packet by correspondence of an attribute of the characteristic based on optical packet carrier wavelength priority.

Claim 46 (new): An optical packet switch for switching inputted optical packets over NW wavelengths, the inputted optical packets comprising optical packets having different attributes of a characteristic based on optical packet service level, where NW is an integer greater than one, the optical packet switch comprising:

a switching fabric; and

a switching/routing control unit operatively associated with the switching fabric and operative to control the switching fabric for switching each one inputted optical packet over a wavelength having an available transmission resource selected from among wavelengths in one of KG groups of wavelengths, where KG is an integer greater than one, the KG groups of wavelengths are formed by grouping the NW wavelengths according to the different attributes of the characteristic based on optical packet service level so that each of the KG groups of wavelengths is allocated to optical packets provided at a common service level which is different from a service level of other optical packets, and said one of KG groups of wavelengths is matched to the one inputted optical packet by correspondence of an optical packet service level.